IN THE CLAIMS

Please replace all prior versions, and listings, of claims in the application with the following list of claims:

1. (Previously Presented) A digital integrated circuit temperature sensor comprising:

an analog-to-digital converter providing a binary word representative of a temperature internal to the integrated circuit;

a generating circuit for providing an analog voltage representative of the circuit temperature and for generating a reference voltage for the analog-to-digital converter; and

a calibration circuit providing respective high and low conversion thresholds to the converter, the low voltage corresponding to said reference voltage, said calibration circuit comprising:

a first operational amplifier having a non-inverting input receiving said reference voltage and having its output providing said high conversion threshold, the non-inverting input of the first amplifier being connected to the junction point of two variable resistive elements series-connected between the output terminal of the first amplifier and a supply reference potential; and

a second operational amplifier having an inverting input terminal receiving the analog voltage depending on temperature and having a non-inverting input connected to the midpoint of two resistive elements series-connected between the output terminal of said second operational amplifier and said supply reference potential, the second operational amplifier providing an amplified voltage to be converted by said analog-to-digital converter.

2. (Previously Presented) The sensor of claim 1, wherein said generating circuit comprises, in parallel between first, second, third, and fourth terminals of a current mirror all providing an identical current from a high supply rail and copying the voltage of the first terminal on the second one, to a low supply rail, respectively:

a first diode-connected PNP-type bipolar transistor;

a first resistive element in series with a second diode-connected PNP-type bipolar transistor, the second bipolar transistor being of greater size than the first one;

a second resistive element in series with a third diode-connected PNP-type bipolar transistor, the third bipolar transistor being of a size identical to the first one and said third terminal providing the reference voltage; and

a current-to-voltage conversion element, said fourth terminal providing the analog voltage representative of the temperature.

3. (Previously Presented) The sensor of claim 2, comprising a voltage mirror formed of two N-channel MOS transistors, copying the voltage between said first and second terminals.

4. (Previously Presented) The sensor of claim 2, wherein said conversion element is a resistor.

5. (Previously Presented) The sensor of claim 1, wherein said variable resistive elements are formed of networks of switchable resistors.

6. (Withdrawn) An integrated circuit comprising:

a digital temperature sensor comprising an analog-to-digital converter providing a binary word representative of a temperature internal to the integrated circuit, and a generating circuit for providing an analog voltage representative of the circuit temperature and for generating a reference voltage for the analog-to-digital converter; and

a JTAG port of communication with the outside of the circuit, an input/output register of the integrated circuit being connected to a register for storing the result provided by the analog-to-digital converter.

7. (Currently Amended) The circuit of claim 6, wherein said digital temperature sensor ~~is the sensor of claim 1.~~ comprises:

an analog-to-digital converter providing a binary word representative of a temperature internal to the integrated circuit;

a generating circuit for providing an analog voltage representative of the circuit temperature and for generating a reference voltage for the analog-to-digital converter; and

a calibration circuit providing respective high and low conversion thresholds to the converter, the low voltage corresponding to said reference voltage, said calibration circuit comprising:

a first operational amplifier having a non-inverting input receiving said reference voltage and having its output providing said high conversion threshold, the non-inverting input of the first amplifier being connected to the junction point of two variable resistive elements series-connected between the output terminal of the first amplifier and a supply reference potential; and

a second operational amplifier having an inverting input terminal receiving the analog voltage depending on temperature and having a non-inverting input connected to the midpoint of two resistive elements series-connected between the output terminal of said second operational amplifier and said supply reference potential, the second operational amplifier providing an amplified voltage to be converted by said analog-to-digital converter.

8. (Withdrawn) An integrated circuit comprising:

a digital temperature sensor comprising an analog-to-digital converter providing a binary word representative of a temperature internal to the integrated circuit, and a generating circuit for providing an analog voltage representative of the circuit temperature and for generating a reference voltage for the analog-to-digital converter; and

a logic block of interpretation of the current temperature measured by the sensor to control the frequency and/or the supply voltage of the integrated circuit.

9. (Currently Amended) The circuit of claim 8, wherein said digital temperature sensor ~~is the sensor of claim 1.~~ comprises:

an analog-to-digital converter providing a binary word representative of a temperature internal to the integrated circuit;

a generating circuit for providing an analog voltage representative of the circuit temperature and for generating a reference voltage for the analog-to-digital converter; and

a calibration circuit providing respective high and low conversion thresholds to the converter, the low voltage corresponding to said reference voltage, said calibration circuit comprising:

a first operational amplifier having a non-inverting input receiving said reference voltage and having its output providing said high conversion threshold, the non-inverting input of the first amplifier being connected to the junction point of two variable resistive elements series-connected between the output terminal of the first amplifier and a supply reference potential; and

a second operational amplifier having an inverting input terminal receiving the analog voltage depending on temperature and having a non-inverting input connected to the midpoint of two resistive elements series-connected between the output terminal of said second operational amplifier and said supply reference potential, the second operational amplifier providing an amplified voltage to be converted by said analog-to-digital converter.

10. (Withdrawn) A method for controlling the clock frequency of a digital integrated circuit, comprising varying the clock frequency in a way inversely proportional to the internal temperature of the circuit.

11. (Withdrawn) The method of claim 10, wherein the temperature is measured by means of a sensor comprising:

an analog-to-digital converter providing a binary word representative of a temperature internal to the integrated circuit; and

a generating circuit for providing an analog voltage representative of the circuit temperature and for generating a reference voltage (V_{BG}) for the analog-to-digital converter.

12. (Currently Amended) The method of claim 10, wherein the temperature is measured ~~by means of the sensor of claim 1.~~ using a sensor comprising:

an analog-to-digital converter providing a binary word representative of a temperature

internal to the integrated circuit;

a generating circuit for providing an analog voltage representative of the circuit temperature and for generating a reference voltage for the analog-to-digital converter; and

a calibration circuit providing respective high and low conversion thresholds to the converter, the low voltage corresponding to said reference voltage, said calibration circuit comprising:

a first operational amplifier having a non-inverting input receiving said reference voltage and having its output providing said high conversion threshold, the non-inverting input of the first amplifier being connected to the junction point of two variable resistive elements series-connected between the output terminal of the first amplifier and a supply reference potential; and

a second operational amplifier having an inverting input terminal receiving the analog voltage depending on temperature and having a non-inverting input connected to the midpoint of two resistive elements series-connected between the output terminal of said second operational amplifier and said supply reference potential, the second operational amplifier providing an amplified voltage to be converted by said analog-to-digital converter.

13. (Withdrawn) A method for controlling the supply voltage of a digital integrated circuit, comprising varying the supply voltage in a way inversely proportional to the internal circuit temperature.

14. (Withdrawn) The method of claim 13, wherein the temperature is measured by means of a sensor comprising:

an analog-to-digital converter providing a binary word representative of a temperature internal to the integrated circuit; and

a generating circuit for providing an analog voltage representative of the circuit temperature and for generating a reference voltage (V_{BG}) for the analog-to-digital converter.

15. (Currently Amended) The method of claim 13, wherein the temperature is measured ~~by means of the sensor of claim 1.~~ using a sensor comprising:

an analog-to-digital converter providing a binary word representative of a temperature internal to the integrated circuit;

a generating circuit for providing an analog voltage representative of the circuit temperature and for generating a reference voltage for the analog-to-digital converter; and

a calibration circuit providing respective high and low conversion thresholds to the converter, the low voltage corresponding to said reference voltage, said calibration circuit comprising:

a first operational amplifier having a non-inverting input receiving said reference voltage and having its output providing said high conversion threshold, the non-inverting input of the first amplifier being connected to the junction point of two variable resistive elements series-connected between the output terminal of the first amplifier and a supply reference potential; and

a second operational amplifier having an inverting input terminal receiving the analog voltage depending on temperature and having a non-inverting input connected to the midpoint of two resistive elements series-connected between the output terminal of said second operational amplifier and said supply reference potential, the second operational amplifier providing an amplified voltage to be converted by said analog-to-digital converter.

16. (New) An integrated circuit temperature sensor for sensing a temperature of at least a portion of the integrated circuit, comprising:

an analog-to-digital converter that provides a digital representation of the temperature;

a sensing circuit that provides a first voltage representative of the temperature and a reference voltage; and

a calibration circuit that provides a high conversion threshold and a second voltage representative of the temperature to the analog-to-digital converter, the calibration circuit comprising:

a first amplifier that provides the high conversion threshold, the first amplifier being coupled to the reference voltage; and

a second amplifier that provides the second voltage representative of the temperature of the at least a portion of the integrated circuit, the second amplifier being coupled to the first voltage representative of the temperature.

17. (New) The sensor of claim 16, wherein the calibration circuit provides a low conversion threshold to the analog-to-digital converter.

18. (New) The sensor of claim 17, wherein the low conversion threshold is the reference voltage.

19. (New) The sensor of claim 16, wherein the sensing circuit provides the reference voltage to the analog-to digital converter.

20. (New) The sensor of claim 16, wherein the first amplifier is a first operational amplifier and the second amplifier is a second operational amplifier, and wherein each of the first and second operational amplifiers comprises a non-inverting input coupled to two resistors.

21. (New) The sensor of claim 20, wherein the calibration circuit further comprises:

a third operational amplifier comprising a non-inverting input coupled to an output of the first operational amplifier; and

a fourth operational amplifier comprising a non-inverting input coupled to an output of the second operational amplifier.

22. (New) The sensor of claim 21, wherein the third and fourth operational amplifiers each comprise an output and an inverting input, and wherein the output is coupled to the inverting input.

23. (New) The sensor of claim 16, wherein the sensing circuit comprises a wilson current mirror.

24. (New) The sensor of claim 23, wherein the wilson current mirror comprises four parallel branches that each provide a substantially identical current.

25. (New) The sensor of claim 23, wherein a first branch of the wilson current mirror comprises a first diode-connected bipolar transistor.

26. (New) The sensor of claim 23, wherein a second branch of the wilson current mirror comprises a first resistive element in series with a second diode-connected bipolar transistor.

27. (New) The sensor of claim 23, wherein a third branch of the wilson current mirror comprises a second resistive element in series with a third diode-connected bipolar transistor, and wherein a terminal of interconnection of the wilson current mirror and the second resistive element provides the reference voltage.

28. (New) The sensor of claim 23, wherein a fourth branch of the wilson current mirror comprises a third resistive element, and wherein a terminal of interconnection of the wilson current mirror and the third resistive element provides the first voltage representative of the temperature.

29. (New) A method of sensing a temperature of at least a portion of an integrated circuit, comprising:

providing a first voltage representative of the temperature;

providing a reference voltage;

providing, to an analog-to-digital converter, a high conversion threshold at least partially based on the reference voltage; and

providing, to the analog-to-digital converter, a second voltage representative of the temperature at least partially based on the first voltage representative of the temperature.

30. (New) The method of claim 29, further comprising:

providing, to the an analog-to-digital converter, a low conversion threshold at least partially based on the reference voltage.

31. (New) The method of claim 30, wherein the low conversion threshold is the reference voltage.

32. (New) The method of claim 30, wherein the high and low conversion thresholds are provided by buffer operational amplifiers.

33. (New) The method of claim 29, further comprising:

providing, at least partially based on the second voltage representative of the temperature, a digital word representative of the temperature.

34. (New) The method of claim 33, wherein the digital word representative of the temperature if provided at least partially based on the high and low conversion thresholds.